

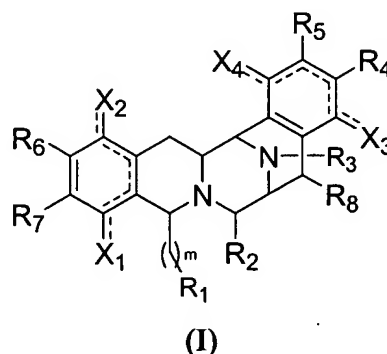
### Amendment to Claims

This listing of claims will replace all prior versions and listings of the claims in the application.

#### Listing of Claims:

1-82. (Canceled)

83. (New) A compound having the structure (I):



wherein:

m is 0, 2, 3, 4, or 5;

R<sub>1</sub> is -OR<sub>A</sub> or -SR<sub>A</sub>, wherein R<sub>A</sub> is hydrogen, -(C=O)R<sub>C</sub>, -(SO<sub>2</sub>)R<sub>C</sub>, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R<sub>C</sub> is independently hydrogen, -OR<sub>D</sub>, -SR<sub>D</sub>, -NHR<sub>D</sub>, -(C=O)R<sub>D</sub>, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R<sub>D</sub> is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R<sub>2</sub> is hydrogen, -OR<sub>E</sub>, =O, -C(=O)R<sub>E</sub>, -CO<sub>2</sub>R<sub>E</sub>, -CN, -SCN, halogen, -SR<sub>E</sub>, -SOR<sub>E</sub>, -SO<sub>2</sub>R<sub>E</sub>, -NO<sub>2</sub>, -N(R<sub>E</sub>)<sub>2</sub>, -NHC(O)R<sub>E</sub>, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R<sub>E</sub> is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein  $R_3$  is hydrogen,  $-\text{COOR}_F$ ,  $-\text{COR}_F$ ,  $-\text{CN}$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_F$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein:

the foregoing aliphatic or heteroaliphatic moieties in  $R_1$ ,  $R_2$  and  $R_3$  may independently be unsubstituted or substituted with one or more substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-\text{OH}$ ,  $-\text{NO}_2$ ,  $-\text{CN}$ ,  $-\text{SCN}$ ,  $-\text{CF}_3$ ,  $-\text{CHCF}_3$ ,  $-\text{CHCl}_2$ ,  $-\text{CH}_2\text{OH}$ ,  $-\text{CH}_2\text{CH}_2\text{OH}$ ,  $-\text{CH}_2\text{NH}_2$ ,  $-\text{CH}_2\text{SO}_2\text{CH}_3$ ,  $-\text{C}(\text{O})\text{R}_x$ ,  $-\text{CO}_2(\text{R}_x)$ ,  $-\text{CON}(\text{R}_x)_2$ ,  $-\text{OC}(\text{O})\text{R}_x$ ,  $-\text{OCO}_2\text{R}_x$ ,  $-\text{OCON}(\text{R}_x)_2$ ,  $-\text{S}(\text{O})_2\text{R}_x$ , or  $-\text{B}(\text{OR}_x)_2$  wherein each occurrence of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic and heteroaliphatic moiety is unsubstituted; and

each of the foregoing aryl, heteroaryl, or cycloheteroaliphatic moieties in  $R_1$ ,  $R_2$  and  $R_3$  may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-\text{OH}$ ,  $-\text{NO}_2$ ,  $-\text{CN}$ ,  $-\text{SCN}$ ,  $-\text{CF}_3$ ,  $-\text{CHCF}_3$ ,  $-\text{CHCl}_2$ ,  $-\text{CH}_2\text{OH}$ ,  $-\text{CH}_2\text{CH}_2\text{OH}$ ,  $-\text{CH}_2\text{NH}_2$ ,  $-\text{CH}_2\text{SO}_2\text{CH}_3$ ,  $-\text{C}(\text{O})\text{R}_x$ ,  $-\text{CO}_2(\text{R}_x)$ ,  $-\text{CON}(\text{R}_x)_2$ ,  $-\text{OC}(\text{O})\text{R}_x$ ,  $-\text{OCO}_2\text{R}_x$ ,  $-\text{OCON}(\text{R}_x)_2$ ,  $-\text{N}(\text{R}_x)_2$ ,  $-\text{S}(\text{O})_2\text{R}_x$ ,  $-\text{NR}_x$ ,  $-\text{CO}(\text{R}_x)$ , or  $-\text{B}(\text{OR}_x)_2$  wherein each occurrence of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio moiety is unsubstituted;

wherein  $R_4$  and  $R_6$  are each independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moieties in  $R_4$  and  $R_6$  are unsubstituted;

wherein  $R_5$  and  $R_7$  are each independently hydrogen,  $-\text{OR}_G$ ,  $-\text{C}(=\text{O})\text{R}_G$ ,  $-\text{CO}_2\text{R}_G$ ,  $-\text{CN}$ ,  $-\text{SCN}$ , halogen,  $-\text{SR}_G$ ,  $-\text{SOR}_G$ ,  $-\text{SO}_2\text{R}_G$ ,  $-\text{NO}_2$ ,  $-\text{N}(\text{R}_G)_2$ ,  $-\text{NHC}(\text{O})\text{R}_G$ , or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, wherein each occurrence of  $R_G$  is independently

hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where the each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moiety in R<sub>5</sub> and R<sub>6</sub> is unsubstituted;

wherein R<sub>8</sub> is hydrogen, alkyl, -OH, =O, -CN, -SCN, halogen, -SH, alkoxy, thioalkyl, amino, or alkylamino;

wherein X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> are each independently hydrogen, -OR<sub>H</sub>, =O, -C(=O)R<sub>H</sub>, -CO<sub>2</sub>R<sub>H</sub>, -CN, -SCN, halogen, -SR<sub>H</sub>, -SOR<sub>H</sub>, -SO<sub>2</sub>R<sub>H</sub>, -NO<sub>2</sub>, -N(R<sub>H</sub>)<sub>2</sub>, -NHC(O)R<sub>H</sub>, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R<sub>H</sub> is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moiety in X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> is unsubstituted;

whereby if at least either X<sub>1</sub> and X<sub>2</sub> or X<sub>3</sub> and X<sub>4</sub> are doubly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two single bonds and one double bond, and a quinone moiety is generated, or if at least either X<sub>1</sub> and X<sub>2</sub> or X<sub>3</sub> and X<sub>4</sub> are singly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two double bonds and one single bond, and a hydroquinone moiety is generated;

wherein:

each of foregoing acyl, alkoxy, alkylthio, thioalkyl, or alkylamino contains unsubstituted cyclic, acyclic, branched or unbranched alkyl of 1 to 10 carbon atoms;

each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing cycloheteroaliphatic moiety is a cyclic heteroaliphatic;

each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon; and pharmaceutically acceptable salts thereof.

84. (New) The compound of claim 83, wherein  $R_1$  is  $-OR_A$ .

85. (New) The compound of claim 83, wherein  $R_1$  is  $-SR_A$ .

86. (New) The compound of claim 83, wherein  $m$  is 0.

87. (New) The compound of claim 83, wherein  $m$  is 2, 3, 4, or 5.

88. (New) The compound of claim 86, wherein:

$R_2$  is  $-CN$ ,  $-SCN$ ,  $=O$ ,  $-OH$ ,  $H$ , or alkoxy;

$R_3$  is hydrogen,  $-CN$ ,  $-CH_2CN$ , aliphatic, or aryl;

$R_4$  and  $R_6$  are each unsubstituted alkyl;

$R_5$  and  $R_7$  are each alkyloxy or thioalkyl;

$R_8$  is hydrogen, alkyl,  $-OH$ ,  $=O$ ,  $-CN$ , halogen,  $-SH$ , alkoxy, thioalkyl, amino, or alkylamino; and

$X_1$ ,  $X_2$ ,  $X_3$ , and  $X_4$  are each independently alkoxy,  $-OH$ , or  $=O$ .

89. (New) The compound of claim 87 wherein:

$R_2$  is  $-CN$ ,  $-SCN$ ,  $=O$ ,  $-OH$ ,  $H$ , or alkoxy;

$R_3$  is hydrogen,  $-CN$ ,  $-CH_2CN$ , aliphatic, or aryl;

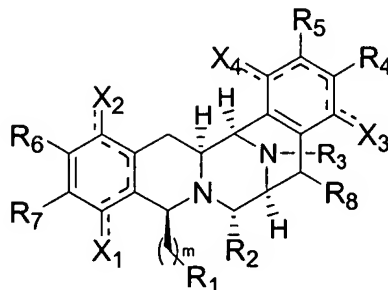
$R_4$  and  $R_6$  are each unsubstituted alkyl;

$R_5$  and  $R_7$  are each alkyloxy or thioalkyl;

$R_8$  is hydrogen, alkyl,  $-OH$ ,  $=O$ ,  $-CN$ , halogen,  $-SH$ , alkoxy, thioalkyl, amino, or alkylamino; and

$X_1$ ,  $X_2$ ,  $X_3$ , and  $X_4$  are each independently alkoxy,  $-OH$ , or  $=O$ .

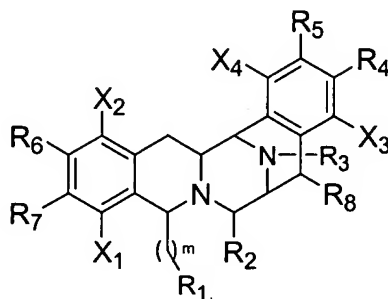
90. (New) The compound of claim 83, wherein the compound has the stereochemistry and structure:



91. (New) The compound of claim 90, wherein  $R_1$  is  $-OR_A$ .

92. (New) The compound of claim 90, wherein  $R_1$  is  $-SR_A$ .

93. (New) The compound of claim 83, wherein the compound has the structure:



94. (New) The compound of claim 93, wherein  $R_1$  is  $-OR_A$ .

95. (New) The compound of claim 93, wherein  $R_1$  is  $-SR_A$ .

96. (New) The compound of claim 93, wherein  $m$  is 0.

97. (New) The compound of claim 93, wherein  $m$  is 2, 3, 4, or 5.

98. (New) The compound of claim 96, wherein:

$R_A$  is hydrogen, unsubstituted lower alkyl, or  $-COR_C$  where  $R_C$  is (heteroaliphatic)aryl, substituted heteroaryl, substituted (aliphatic)heteroaryl, or substituted (heteroaliphatic)heteroaryl moiety;

$R_2$  is  $-CN$ ,  $-SCN$ ,  $=O$ ,  $-OH$ ,  $H$ , or alkoxy;

$R_3$  is hydrogen,  $-CN$ ,  $-CH_2CN$ , aliphatic, or aryl;

$R_4$  and  $R_6$  are each unsubstituted alkyl;

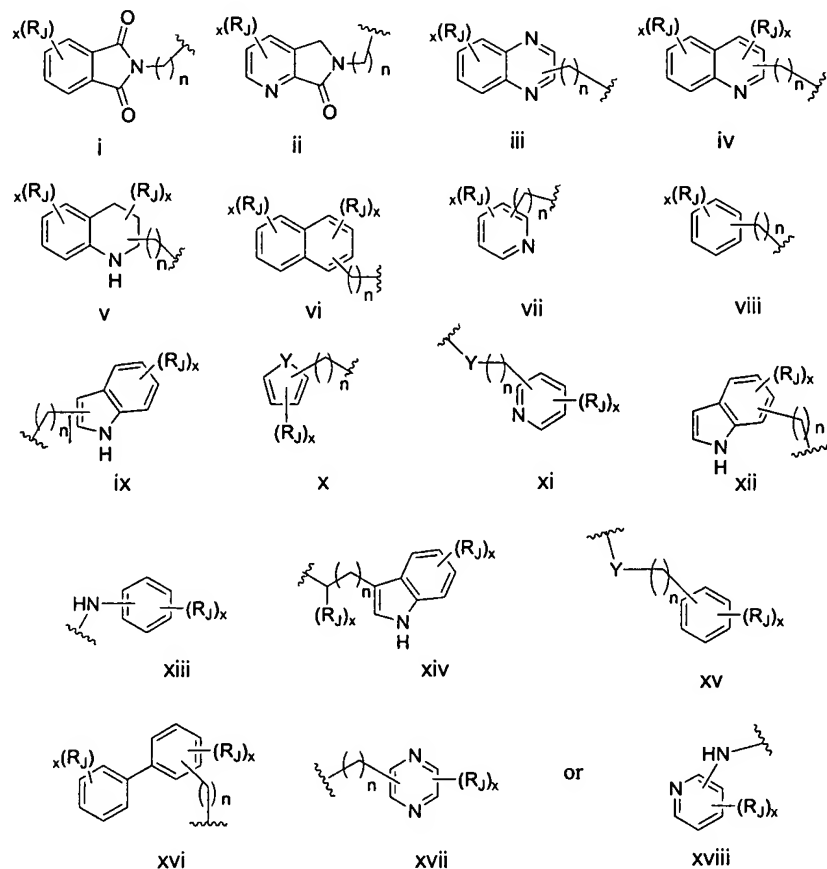
$R_5$  and  $R_7$  are each alkyloxy or thioalkyl;

$R_8$  is hydrogen, alkyl,  $-OH$ ,  $=O$ ,  $-CN$ , halogen,  $-SH$ , alkoxy, thioalkyl, amino, or alkylamino; and

$X_1$ ,  $X_2$ ,  $X_3$ , and  $X_4$  are each independently alkoxy, or  $-OH$ .

99. (New) The compound of claim 98, wherein:

$R_C$  is:



wherein each occurrence of  $R_J$  is independently  $-OR_K$ ,  $-C(=O)R_K$ ,  $-CO_2R_K$ ,  $-CN$ ,  $-SCN$ , halogen,  $-SR_K$ ,  $-SOR_K$ ,  $-SO_2R_K$ ,  $-NO_2$ ,  $-N(R_K)_2$ ,  $-NHC(O)R_K$ ,  $-B(OR_K)_2$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_K$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or wherein two occurrences of  $R_K$ , taken together form a cyclic aliphatic or heteroaliphatic moiety; wherein each occurrence of  $Y$  is independently O, S or NH; wherein each occurrence of  $x$  is independently 1-5; and wherein each occurrence of  $n$  is independently 0-3 wherein:

the foregoing aliphatic or heteroaliphatic is unsubstituted and

each of the foregoing aryl or heteroaryl moieties may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-OH$ ,  $-NO_2$ ,  $-CN$ ,  $-SCN$ ,  $-CF_3$ ,  $-CHCF_3$ ,  $-CHCl_2$ ,  $-CH_2OH$ ,  $-CH_2CH_2OH$ ,  $-CH_2NH_2$ ,  $-CH_2SO_2CH_3$ ,  $-C(O)R_x$ ,  $-CO_2(R_x)$ ,  $-CON(R_x)_2$ ,  $-OC(O)R_x$ ,  $-OCO_2R_x$ ,  $-OCON(R_x)_2$ ,  $-N(R_x)_2$ ,  $-S(O)_2R_x$ ,  $-NR_x$  (CO) $R_x$ , or  $-B(OR_x)_2$  wherein each occurrence of wherein each occurrence of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, , heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio is unsubstituted; and wherein:

each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon.

100. (New) The compound of claim 97, wherein:

$R_A$  is hydrogen, unsubstituted lower alkyl, or  $-COR_C$  where  $R_C$  is (heteroaliphatic)aryl, substituted heteroaryl, substituted (aliphatic)heteroaryl, or substituted (heteroaliphatic)heteroaryl moiety;

$R_2$  is  $-CN$ ,  $-SCN$ ,  $=O$ ,  $-OH$ ,  $H$ , or alkoxy;

$R_3$  is hydrogen,  $-CN$ ,  $-CH_2CN$ , aliphatic, or aryl;

$R_4$  and  $R_6$  are each unsubstituted alkyl;

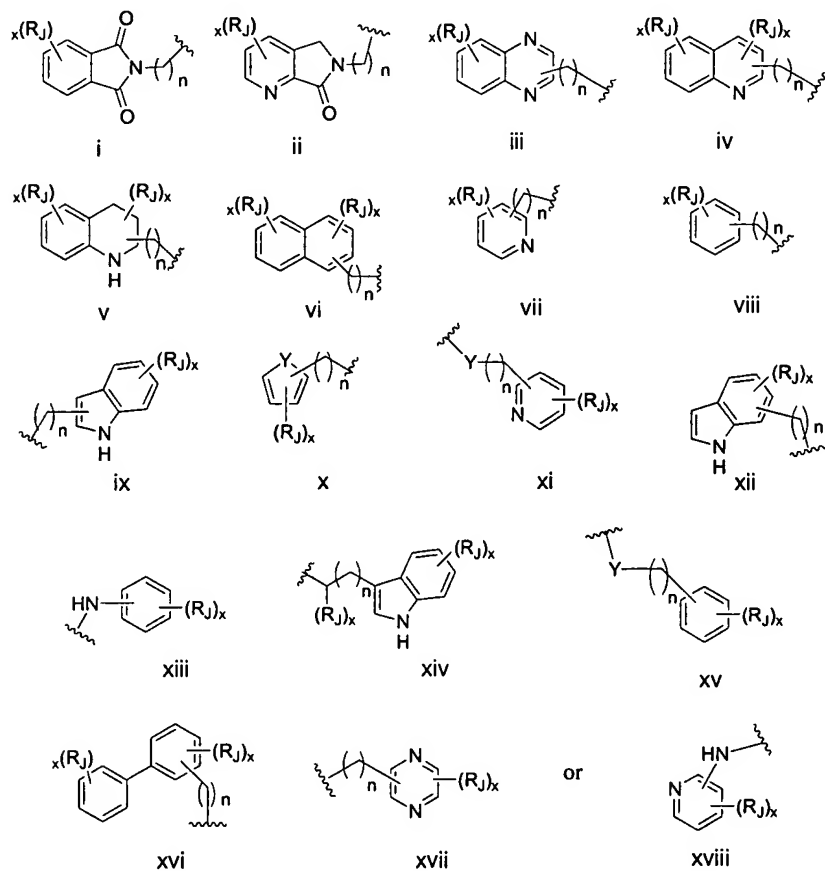
$R_5$  and  $R_7$  are each alkyloxy or thioalkyl;

$R_8$  is hydrogen, alkyl,  $-OH$ ,  $=O$ ,  $-CN$ , halogen,  $-SH$ , alkoxy, thioalkyl, amino, or alkylamino; and

$X_1$ ,  $X_2$ ,  $X_3$ , and  $X_4$  are each independently alkoxy or  $-OH$ .

101. (New) The compound of claim 100, wherein:

$R_C$  is:





wherein each occurrence of  $R_J$  is independently  $-OR_K$ ,  $-C(=O)R_K$ ,  $-CO_2R_K$ ,  $-CN$ ,  $-SCN$ , halogen,  $-SR_K$ ,  $-SOR_K$ ,  $-SO_2R_K$ ,  $-NO_2$ ,  $-N(R_K)_2$ ,  $-NHC(O)R_K$ ,  $-B(OR_K)_2$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_K$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or wherein two occurrences of  $R_K$ , taken together form a cyclic aliphatic or heteroaliphatic moiety; wherein each occurrence of  $Y$  is independently O, S or NH; wherein each occurrence of  $x$  is independently 1-5; and wherein each occurrence of  $n$  is independently 0-3 wherein:

the foregoing aliphatic or heteroaliphatic is unsubstituted and

each of the foregoing aryl or heteroaryl moieties may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-OH$ ,  $-NO_2$ ,  $-CN$ ,  $-SCN$ ,  $-CF_3$ ,  $-CHCF_3$ ,  $-CHCl_2$ ,  $-CH_2OH$ ,  $-CH_2CH_2OH$ ,  $-CH_2NH_2$ ,  $-CH_2SO_2CH_3$ ,  $-C(O)R_x$ ,  $-CO_2(R_x)$ ,  $-CON(R_x)_2$ ,  $-OC(O)R_x$ ,  $-OCO_2R_x$ ,  $-OCON(R_x)_2$ ,  $-N(R_x)_2$ ,  $-S(O)_2R_x$ ,  $-NR_x$  (CO) $R_x$ , or  $-B(OR_x)_2$  wherein each occurrence of wherein each occurrence of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio is unsubstituted; and wherein:

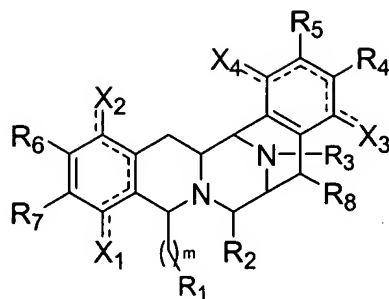
each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon.

102. (New) A compound having the structure:



wherein:

m is 1;

wherein  $R_1$  is  $-OR_A$  or  $-SR_A$ , wherein  $R_A$  is hydrogen,  $-(C=O)R_C$ ,  $-(SO_2)R_C$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_C$  is independently hydrogen,  $-OR_D$ ,  $-SR_D$ ,  $-NHR_D$ ,  $-(C=O)R_D$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_D$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein  $R_2$  is hydrogen,  $-OR_E$ ,  $=O$ ,  $-C(=O)R_E$ ,  $-CO_2R_E$ ,  $-CN$ ,  $-SCN$ , halogen,  $-SR_E$ ,  $-SOR_E$ ,  $-SO_2R_E$ ,  $-NO_2$ ,  $-N(R_E)_2$ ,  $-NHC(O)R_E$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_E$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein  $R_3$  is hydrogen,  $-COOR_F$ ,  $-COR_F$ ,  $-CN$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_F$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein:

the foregoing aliphatic or heteroaliphatic moieties in  $R_A$ ,  $R_2$  and  $R_3$  may independently be unsubstituted or substituted with one or more substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-OH$ ,  $-NO_2$ ,  $-CN$ ,  $-SCN$ ,  $-CF_3$ ,  $-CHCF_3$ ,  $-CHCl_2$ ,  $-CH_2OH$ ,  $-CH_2CH_2OH$ ,  $-CH_2NH_2$ ,  $-CH_2SO_2CH_3$ ,  $-C(O)R_x$ ,  $-CO_2(R_x)$ ,  $-$

CON(R<sub>x</sub>)<sub>2</sub>, -OC(O)R<sub>x</sub>, -OCO<sub>2</sub>R<sub>x</sub>, -OCON(R<sub>x</sub>)<sub>2</sub>, -S(O)<sub>2</sub>R<sub>x</sub>, or -B(OR<sub>x</sub>)<sub>2</sub> wherein each occurrence of R<sub>x</sub> independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic and heteroaliphatic moiety is unsubstituted; and

each of the foregoing aryl, heteroaryl, or cycloheteroaliphatic moieties in R<sub>A</sub>, R<sub>2</sub> and R<sub>3</sub> may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I, -OH, -NO<sub>2</sub>, -CN, -SCN, -CF<sub>3</sub>, -CHCF<sub>3</sub>, -CHCl<sub>2</sub>, -CH<sub>2</sub>OH, -CH<sub>2</sub>CH<sub>2</sub>OH, -CH<sub>2</sub>NH<sub>2</sub>, -CH<sub>2</sub>SO<sub>2</sub>CH<sub>3</sub>, -C(O)R<sub>x</sub>, -CO<sub>2</sub>(R<sub>x</sub>), -CON(R<sub>x</sub>)<sub>2</sub>, -OC(O)R<sub>x</sub>, -OCO<sub>2</sub>R<sub>x</sub>, -OCON(R<sub>x</sub>)<sub>2</sub>, -N(R<sub>x</sub>)<sub>2</sub>, -S(O)<sub>2</sub>R<sub>x</sub>, -NR<sub>x</sub> (CO)R<sub>x</sub>, or -B(OR<sub>x</sub>)<sub>2</sub> wherein each occurrence of wherein each occurrence of R<sub>x</sub> independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moiety is unsubstituted; and

wherein R<sub>4</sub> and R<sub>6</sub> are each independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moieties in R<sub>4</sub> and R<sub>6</sub> are unsubstituted;

wherein R<sub>5</sub> and R<sub>7</sub> are each independently hydrogen, -OR<sub>G</sub>, -C(=O)R<sub>G</sub>, -CO<sub>2</sub>R<sub>G</sub>, -CN, -SCN, halogen, -SR<sub>G</sub>, -SOR<sub>G</sub>, -SO<sub>2</sub>R<sub>G</sub>, -NO<sub>2</sub>, -N(R<sub>G</sub>)<sub>2</sub>, -NHC(O)R<sub>G</sub>, or an unsubstituted aliphatic, unsubstituted heteroaliphatic, unsubstituted aryl or unsubstituted heteroaryl moiety, wherein each occurrence of R<sub>G</sub> is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moieties in R<sub>5</sub> and R<sub>7</sub> is unsubstituted;

wherein R<sub>8</sub> is hydrogen, alkyl, -OH, =O, -CN, -SCN, halogen, -SH, alkoxy, thioalkyl, amino, or alkylamino;

wherein X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> are each independently hydrogen, -OR<sub>H</sub>, =O, -C(=O)R<sub>H</sub>, -CO<sub>2</sub>R<sub>H</sub>, -CN, -SCN, halogen, -SR<sub>H</sub>, -SOR<sub>H</sub>, -SO<sub>2</sub>R<sub>H</sub>, -NO<sub>2</sub>, -N(R<sub>H</sub>)<sub>2</sub>, -NHC(O)R<sub>H</sub>, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R<sub>H</sub> is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy,

alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moiety in X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> is unsubstituted;

whereby if at least either X<sub>1</sub> and X<sub>2</sub> or X<sub>3</sub> and X<sub>4</sub> are doubly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two single bonds and one double bond, and a quinone moiety is generated, or if at least either X<sub>1</sub> and X<sub>2</sub> or X<sub>3</sub> and X<sub>4</sub> are singly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two double bonds and one single bond, and a hydroquinone moiety is generated;

wherein:

each of foregoing acyl, alkoxy, alkylthio, thioalkyl, or alkylamino contains unsubstituted cyclic, acyclic, branched or unbranched alkyl of 1 to 10 carbon atoms;

each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing cycloheteroaliphatic moiety is a cyclic heteroaliphatic;

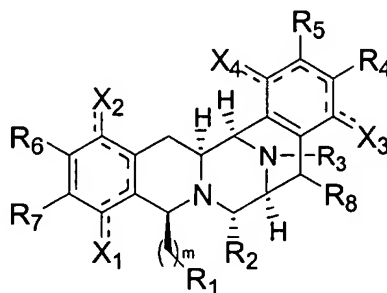
each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon; and pharmaceutically acceptable salts thereof provided that:

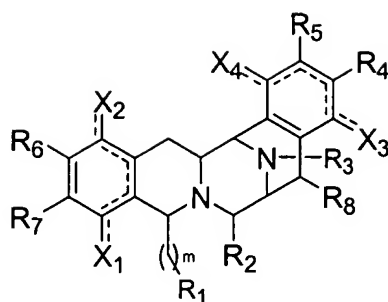
- (i) it is not renieramycin A, B, C, D, E, or F;
- (ii) R<sub>1</sub> is not -O(C=O)C(CH<sub>3</sub>)=C(CH<sub>3</sub>)H; -OH; -(SO<sub>2</sub>)CH<sub>3</sub>; -O(C=O)CH<sub>3</sub>; -O(C=O)CH<sub>2</sub>CH<sub>3</sub>; or -O(C=O)-O(*i*-C<sub>3</sub>H<sub>7</sub>); and
- (iii) X<sub>1</sub> and R<sub>7</sub> are not joined together as a methylene-dioxy group.

103. (New) The compound of claim 102, wherein R<sub>1</sub> is -OR<sub>A</sub>.

104. (New) The compound of claim 102, wherein  $R_1$  is  $-SR_A$ .
105. (New) The compound of claim 102, wherein the aliphatic and heteroaliphatic moieties in  $R_1$ ,  $R_2$ , and  $R_3$  are unsubstituted.
106. (New) The compound of claim 105, wherein:
- $R_2$  is  $-CN$ ,  $-SCN$ ,  $=O$ ,  $-OH$ ,  $H$ , or alkoxy;
  - $R_3$  is hydrogen,  $-CN$ ,  $-CH_2CN$ , unsubstituted aliphatic, or aryl;
  - $R_4$  and  $R_6$  are each alkyl;
  - $R_5$  and  $R_7$  are each alkyloxy or thioalkyl;
  - $R_8$  is hydrogen, alkyl,  $-OH$ ,  $=O$ ,  $-CN$ , halogen,  $-SH$ , alkoxy, thioalkyl, amino, or alkylamino; and
  - $X_1$ ,  $X_2$ ,  $X_3$ , and  $X_4$  are each independently alkoxy,  $-OH$ , or  $=O$ .
107. (New) The compound of claim 102, wherein the compound has the stereochemistry and structure:



108. (New) The compound of claim 107, wherein  $R_1$  is  $-OR_A$ .
109. (New) The compound of claim 107, wherein  $R_1$  is  $-SR_A$ .
110. (New) A compound having the structure:



wherein:

m is 1;

wherein  $R_1$  is  $-OR_A$  or  $-SR_A$ , wherein  $R_A$  is hydrogen,  $-(C=O)R_C$ ,  $-(SO_2)R_C$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_C$  is independently hydrogen,  $-OR_D$ ,  $-SR_D$ ,  $-NHR_D$ ,  $-(C=O)R_D$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_D$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein  $R_2$  is hydrogen,  $-OR_E$ ,  $=O$ ,  $-C(=O)R_E$ ,  $-CO_2R_E$ ,  $-CN$ ,  $-SCN$ , halogen,  $-SR_E$ ,  $-SOR_E$ ,  $-SO_2R_E$ ,  $-NO_2$ ,  $-N(R_E)_2$ ,  $-NHC(O)R_E$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_E$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein  $R_3$  is hydrogen,  $-COOR_F$ ,  $-COR_F$ ,  $-CN$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_F$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein:

the foregoing aliphatic or heteroaliphatic moieties in  $R_A$ ,  $R_2$  and  $R_3$  may independently be unsubstituted or substituted with one or more substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-OH$ ,  $-NO_2$ ,  $-CN$ ,  $-SCN$ ,  $-CF_3$ ,  $-CHCF_3$ ,  $-CHCl_2$ ,  $-CH_2OH$ ,  $-CH_2CH_2OH$ ,  $-CH_2NH_2$ ,  $-CH_2SO_2CH_3$ ,  $-C(O)R_x$ ,  $-CO_2(R_x)$ ,  $-CON(R_x)_2$ ,  $-OC(O)R_x$ ,  $-OCO_2R_x$ ,  $-OCON(R_x)_2$ ,  $-S(O)_2R_x$ , or  $-B(OR_x)_2$  wherein each occurrence

of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic and heteroaliphatic moiety is unsubstituted; and

each of the foregoing aryl, heteroaryl, or cycloheteroaliphatic moieties in  $R_A$ ,  $R_2$  and  $R_3$  may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I, -OH, -NO<sub>2</sub>, -CN, -SCN, -CF<sub>3</sub>, -CHCF<sub>3</sub>, -CHCl<sub>2</sub>, -CH<sub>2</sub>OH, -CH<sub>2</sub>CH<sub>2</sub>OH, -CH<sub>2</sub>NH<sub>2</sub>, -CH<sub>2</sub>SO<sub>2</sub>CH<sub>3</sub>, -C(O) $R_x$ , -CO<sub>2</sub>( $R_x$ ), -CON( $R_x$ )<sub>2</sub>, -OC(O) $R_x$ , -OCO<sub>2</sub> $R_x$ , -OCON( $R_x$ )<sub>2</sub>, -N( $R_x$ )<sub>2</sub>, -S(O)<sub>2</sub> $R_x$ , -NR<sub>x</sub> (CO) $R_x$ , or -B(OR<sub>x</sub>)<sub>2</sub> wherein each occurrence of wherein each occurrence of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moiety is unsubstituted; and

wherein  $R_4$  and  $R_6$  are each independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moieties in  $R_4$  and  $R_6$  are unsubstituted;

wherein  $R_5$  and  $R_7$  are each independently hydrogen, -OR<sub>G</sub>, -C(=O) $R_G$ , -CO<sub>2</sub> $R_G$ , -CN, -SCN, halogen, -SR<sub>G</sub>, -SOR<sub>G</sub>, -SO<sub>2</sub> $R_G$ , -NO<sub>2</sub>, -N( $R_G$ )<sub>2</sub>, -NHC(O) $R_G$ , or an unsubstituted aliphatic, unsubstituted heteroaliphatic, unsubstituted aryl or unsubstituted heteroaryl moiety, wherein each occurrence of  $R_G$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moieties in  $R_5$  and  $R_7$  is unsubstituted;

wherein  $R_8$  is hydrogen, alkyl, -OH, =O, -CN, -SCN, halogen, -SH, alkoxy, thioalkyl, amino, or alkylamino;

wherein  $X_1$ ,  $X_2$ ,  $X_3$  and  $X_4$  are each independently hydrogen, -OR<sub>H</sub>, =O, -C(=O) $R_H$ , -CO<sub>2</sub> $R_H$ , -CN, -SCN, halogen, -SR<sub>H</sub>, -SOR<sub>H</sub>, -SO<sub>2</sub> $R_H$ , -NO<sub>2</sub>, -N( $R_H$ )<sub>2</sub>, -NHC(O) $R_H$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_H$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety where each of the foregoing aliphatic,

heteroaliphatic, aryl, heteroaryl, aryloxy, arylthio, heteroaryloxy and heteroarylthio moiety in X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> is unsubstituted;

whereby if at least either X<sub>1</sub> and X<sub>2</sub> or X<sub>3</sub> and X<sub>4</sub> are doubly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two single bonds and one double bond, and a quinone moiety is generated, or if at least either X<sub>1</sub> and X<sub>2</sub> or X<sub>3</sub> and X<sub>4</sub> are singly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two double bonds and one single bond, and a hydroquinone moiety is generated;

wherein:

each of foregoing acyl, alkoxy, alkylthio, thioalkyl, or alkylamino contains unsubstituted cyclic, acyclic, branched or unbranched alkyl of 1 to 10 carbon atoms;

each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing cycloheteroaliphatic moiety is a cyclic heteroaliphatic;

each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

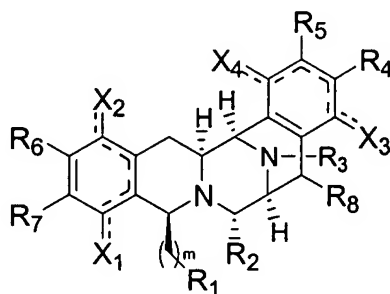
each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon; and pharmaceutically acceptable salts thereof provided that:

- (i) it is not renieramycin A, B, C, D, E, or F;
- (ii) all of X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, and X<sub>4</sub> are not =O;
- (iii) all of X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, and X<sub>4</sub> are not -OMe; and
- (iv) X<sub>1</sub> and R<sub>7</sub> are not joined together as a methylene-dioxy group.

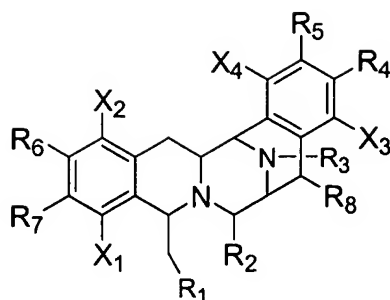
111. (New) The compound of claim 110, wherein R<sub>1</sub> is -OR<sub>A</sub>.



112. (New) The compound of claim 110, wherein  $R_1$  is  $-SR_A$ .
113. (New) The compound of claim 110, wherein the aliphatic and heteroaliphatic moieties in  $R_1$ ,  $R_2$ , and  $R_3$  are unsubstituted.
114. (New) The compound of claim 110, wherein:  
 $R_2$  is  $-CN$ ,  $-SCN$ ,  $=O$ ,  $-OH$ ,  $H$ , or alkoxy;  
 $R_3$  is hydrogen,  $-CN$ ,  $-CH_2CN$ , unsubstituted aliphatic, or aryl;  
 $R_4$  and  $R_6$  are each alkyl;  
 $R_5$  and  $R_7$  are each alkyloxy or thioalkyl;  
 $R_8$  is hydrogen, alkyl,  $-OH$ ,  $=O$ ,  $-CN$ , halogen,  $-SH$ , alkoxy, thioalkyl, amino, or alkylamino; and  
 $X_1$ ,  $X_2$ ,  $X_3$ , and  $X_4$  are each independently alkoxy,  $-OH$ , or  $=O$ .
115. (New) The compound of claim 110, wherein the compound has the stereochemistry and structure:



116. (New) The compound of claim 115, wherein  $R_1$  is  $-OR_A$ .
117. (New) The compound of claim 115, wherein  $R_1$  is  $-SR_A$ .
118. (New) A compound that has the structure:



wherein:

$R_1$  is  $-OR_A$  or  $-SR_A$ , wherein  $R_A$  is hydrogen,  $-(C=O)R_C$ ,  $-(SO_2)R_C$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_C$  is independently hydrogen,  $-OR_D$ ,  $-SR_D$ ,  $-NHR_D$ ,  $-(C=O)R_D$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_D$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety wherein:

the foregoing aliphatic or heteroaliphatic moieties in  $R_1$  is unsubstituted;

the foregoing aryl moiety in  $R_1$  may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-OH$ ,  $-NO_2$ ,  $-CN$ ,  $-SCN$ ,  $-CF_3$ ,  $-CHCF_3$ ,  $-CHCl_2$ ,  $-CH_2OH$ ,  $-CH_2CH_2OH$ ,  $-CH_2NH_2$ ,  $-CH_2SO_2CH_3$ ,  $-C(O)R_x$ ,  $-CO_2(R_x)$ ,  $-CON(R_x)_2$ ,  $-OC(O)R_x$ ,  $-OCO_2R_x$ ,  $-OCON(R_x)_2$ ,  $-N(R_x)_2$ ,  $-S(O)_2R_x$ ,  $-NR_x$   $(CO)R_x$ , or  $-B(OR_x)_2$  wherein each occurrence of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, unsubstituted aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio is unsubstituted; and

the foregoing heteroaryl moieties in  $R_1$  is substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-OH$ ,  $-NO_2$ ,  $-CN$ ,  $-SCN$ ,  $-CF_3$ ,  $-CHCF_3$ ,  $-CHCl_2$ ,  $-CH_2OH$ ,  $-CH_2CH_2OH$ ,  $-CH_2NH_2$ ,  $-CH_2SO_2CH_3$ ,  $-C(O)R_x$ ,  $-CO_2(R_x)$ ,  $-CON(R_x)_2$ ,  $-OC(O)R_x$ ,  $-OCO_2R_x$ ,  $-OCON(R_x)_2$ ,  $-N(R_x)_2$ ,  $-S(O)_2R_x$ ,  $-NR_x$   $(CO)R_x$ , or  $-B(OR_x)_2$  wherein each occurrence of wherein each occurrence of  $R_x$  independently is aliphatic,

heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio is unsubstituted;

R<sub>2</sub> is -CN, -SCN, -OH, H, or alkoxy;

R<sub>3</sub> is hydrogen, aliphatic, or aryl;

R<sub>4</sub> and R<sub>6</sub> are each alkyl;

R<sub>5</sub> and R<sub>7</sub> are each alkyloxy or thioalkyl;

R<sub>8</sub> is hydrogen, alkyl, -OH, =O, -CN, halogen, -SH, alkoxy, thioalkyl, amino, or alkylamino;

X<sub>1</sub> and X<sub>4</sub> are each -OH; and

X<sub>2</sub> and X<sub>3</sub> are each alkoxy or thioalkyl; and

wherein:

each of foregoing alkoxy, alkylthio, thioalkyl, or alkylamino contains unsubstituted alkyl of 1 to 10 carbon atoms;

each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing cycloheteroaliphatic moiety is a cyclic heteroaliphatic;

each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

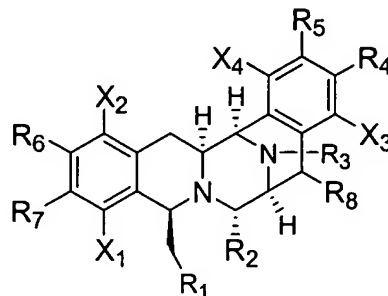
each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon; and pharmaceutically acceptable salts thereof.

119. (New) The compound of claim 118, wherein R<sub>1</sub> is -OR<sub>A</sub>.

120. (New) The compound of claim 118, wherein R<sub>1</sub> is -SR<sub>A</sub>.

121. (New) The compound of claim 118, wherein  $R_2$  is -CN, -OH, or H;  $R_3$  is Me;  $R_4$  and  $R_6$  are each Me;  $R_5$  and  $R_7$  are each -OMe;  $X_1$  and  $X_4$  are each -OH;  $R_8$  is hydrogen; and  $X_2$  and  $X_3$  are each -OMe.

122. (New) A compound that has the structure:



wherein:

$R_1$  is  $-OR_A$  or  $-SR_A$ , wherein  $R_A$  is hydrogen,  $-(C=O)R_C$ ,  $-(SO_2)R_C$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_C$  is independently hydrogen,  $-OR_D$ ,  $-SR_D$ ,  $-NHR_D$ ,  $-(C=O)R_D$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_D$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety wherein:

the foregoing aliphatic or heteroaliphatic moieties in  $R_1$  is unsubstituted;

the foregoing aryl moiety in  $R_1$  may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I, -OH, -NO<sub>2</sub>, -CN, -SCN, -CF<sub>3</sub>, -CHCF<sub>3</sub>, -CHCl<sub>2</sub>, -CH<sub>2</sub>OH, -CH<sub>2</sub>CH<sub>2</sub>OH, -CH<sub>2</sub>NH<sub>2</sub>, -CH<sub>2</sub>SO<sub>2</sub>CH<sub>3</sub>, -C(O) $R_x$ , -CO<sub>2</sub>( $R_x$ ), -CON( $R_x$ )<sub>2</sub>, -OC(O) $R_x$ , -OCO<sub>2</sub> $R_x$ , -OCON( $R_x$ )<sub>2</sub>, -N( $R_x$ )<sub>2</sub>, -S(O)<sub>2</sub> $R_x$ , -NR<sub>x</sub> (CO) $R_x$ , or -B(OR<sub>x</sub>)<sub>2</sub> wherein each occurrence of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, unsubstituted aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio is unsubstituted; and

the foregoing heteroaryl moieties in  $R_1$  is substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I, -OH, -NO<sub>2</sub>, -CN, -SCN, -CF<sub>3</sub>, -CHCF<sub>3</sub>, -CHCl<sub>2</sub>, -CH<sub>2</sub>OH, -CH<sub>2</sub>CH<sub>2</sub>OH, -CH<sub>2</sub>NH<sub>2</sub>, -CH<sub>2</sub>SO<sub>2</sub>CH<sub>3</sub>, -C(O)R<sub>x</sub>, -CO<sub>2</sub>(R<sub>x</sub>), -CON(R<sub>x</sub>)<sub>2</sub>, -OC(O)R<sub>x</sub>, -OCO<sub>2</sub>R<sub>x</sub>, -OCON(R<sub>x</sub>)<sub>2</sub>, -N(R<sub>x</sub>)<sub>2</sub>, -S(O)<sub>2</sub>R<sub>x</sub>, -NR<sub>x</sub> (CO)R<sub>x</sub>, or -B(OR<sub>x</sub>)<sub>2</sub> wherein each occurrence of wherein each occurrence of R<sub>x</sub> independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio is unsubstituted;

R<sub>2</sub> is -CN, -SCN, OH, H, or alkoxy;

R<sub>3</sub> is hydrogen, aliphatic, or aryl;

R<sub>4</sub> and R<sub>6</sub> are each alkyl;

R<sub>5</sub> and R<sub>7</sub> are each alkyloxy or thioalkyl;

R<sub>8</sub> is hydrogen, alkyl, -OH, =O, CN, halogen, SH, alkoxy, thioalkyl, amino, or alkylamino;

X<sub>1</sub> and X<sub>4</sub> are each OH; and

X<sub>2</sub> and X<sub>3</sub> are each alkoxy or thioalkyl; and

wherein:

each of foregoing alkoxy, alkylthio, thioalkyl, or alkylamino contains unsubstituted alkyl of 1 to 10 carbon atoms;

each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing cycloheteroaliphatic moiety is a cyclic heteroaliphatic;

each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional

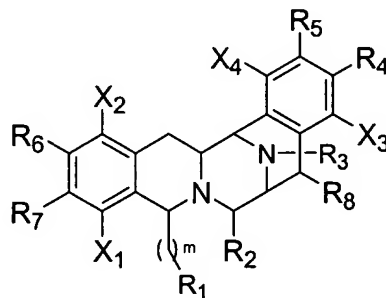
heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon; and pharmaceutically acceptable salts thereof.

123. (New) The compound of claim 122, wherein  $R_1$  is  $-OR_A$ .

124. (New) The compound of claim 122, wherein  $R_1$  is  $-SR_A$ .

125. (New) The compound of claim 122, wherein  $R_2$  is  $-CN$ ,  $-OH$ , or  $H$ ;  $R_3$  is  $Me$ ;  $R_4$  and  $R_6$  are each  $Me$ ;  $R_5$  and  $R_7$  are each  $OMe$ ;  $X_1$  and  $X_4$  are each  $-OH$ ;  $R_8$  is hydrogen; and  $X_2$  and  $X_3$  are each  $OMe$ .

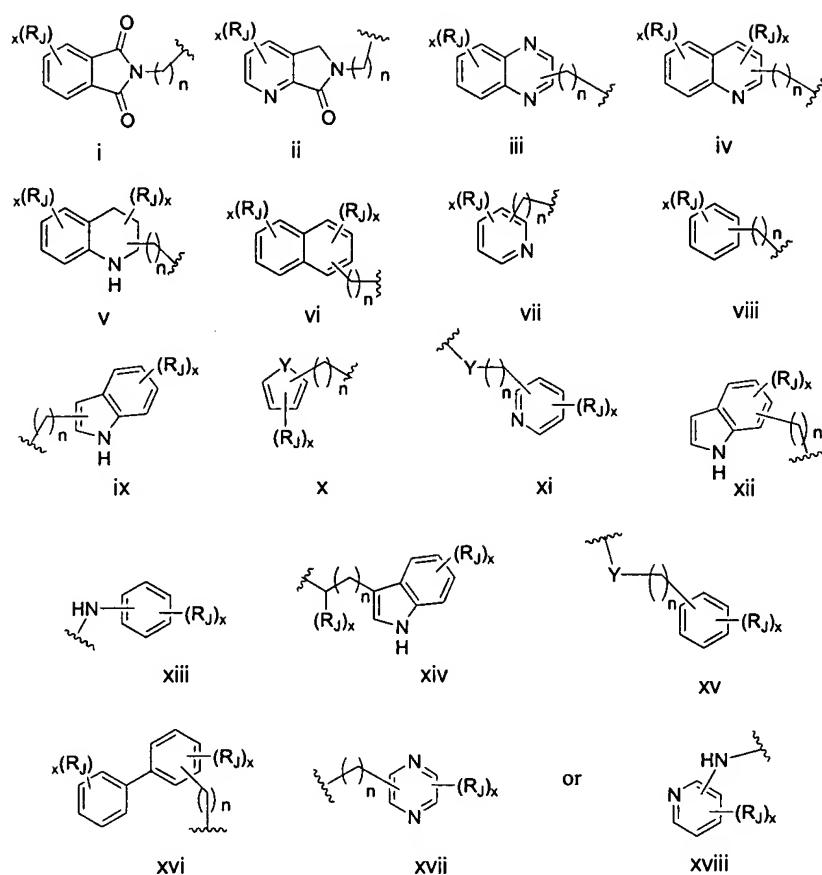
126. (New) A compound that has the structure:



wherein:

$R_1$  is  $-O(C=O)R_C$  or  $-S(C=O)R_C$ ;

$R_C$  is:



wherein each occurrence of  $R_J$  is independently  $-OR_K$ ,  $-C(=O)R_K$ ,  $-CO_2R_K$ ,  $-CN$ ,  $-SCN$ , halogen,  $-SR_K$ ,  $-SOR_K$ ,  $-SO_2R_K$ ,  $-NO_2$ ,  $-N(R_K)_2$ ,  $-NHC(O)R_K$ ,  $-B(OR_K)_2$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_K$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or wherein two occurrences of  $R_K$ , taken together form a cyclic aliphatic or heteroaliphatic moiety; wherein each occurrence of  $Y$  is independently O, S or NH; wherein each occurrence of  $x$  is independently 1-5; and wherein each occurrence of  $n$  is independently 0-3 wherein:

the foregoing aliphatic or heteroaliphatic is unsubstituted and

each of the foregoing aryl or heteroaryl moieties may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I,  $-OH$ ,  $-NO_2$ ,  $-CN$ ,  $-SCN$ ,  $-CF_3$ ,  $-CHCF_3$ ,  $-CHCl_2$ ,  $-CH_2OH$ ,  $-CH_2CH_2OH$ ,  $-CH_2NH_2$ ,  $-CH_2SO_2CH_3$ ,  $-C(O)R_x$ ,  $-CO_2(R_x)$ ,  $-CON(R_x)_2$ ,  $-OC(O)R_x$ ,  $-OCO_2R_x$ ,  $-OCON(R_x)_2$ ,  $-N(R_x)_2$ ,  $-S(O)_2R_x$ ,  $-NR_x(CO)R_x$ , or  $-B(OR_x)_2$  wherein each occurrence

of wherein each occurrence of  $R_x$  independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, , heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio is unsubstituted; and

wherein:

each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

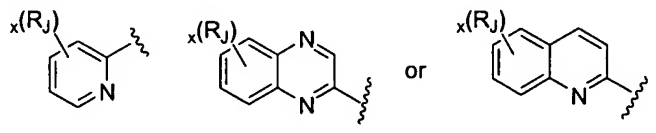
each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon; and pharmaceutically acceptable salts.

127. (New) The compound of claim 126, wherein  $R_1$  is  $-O(C=O)R_C$ .

128. (New) The compound of claim 126, wherein  $R_1$  is  $-S(C=O)R_C$ .

129. (New) The compound of claim 126, wherein  $X_1$  is OH,  $X_2$  is  $OCH_3$ ,  $X_3$  is  $OCH_3$ ,  $X_4$  is OH,  $R_2$  is CN, H or OH,  $R_3$  is Me,  $R_4$  is  $CH_3$ ,  $R_5$  is  $OCH_3$ ,  $R_6$  is  $CH_3$ ,  $R_7$  is  $OCH_3$ , and  $R_8$  is H.

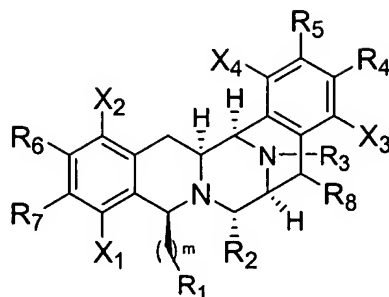
130. (New) The compound of claim 129 wherein  $R_C$  is:



wherein  $R_J$  is hydrogen, halogen,  $-OH$ , lower alkyl or lower alkoxy and  $x$  is 1 or 2.



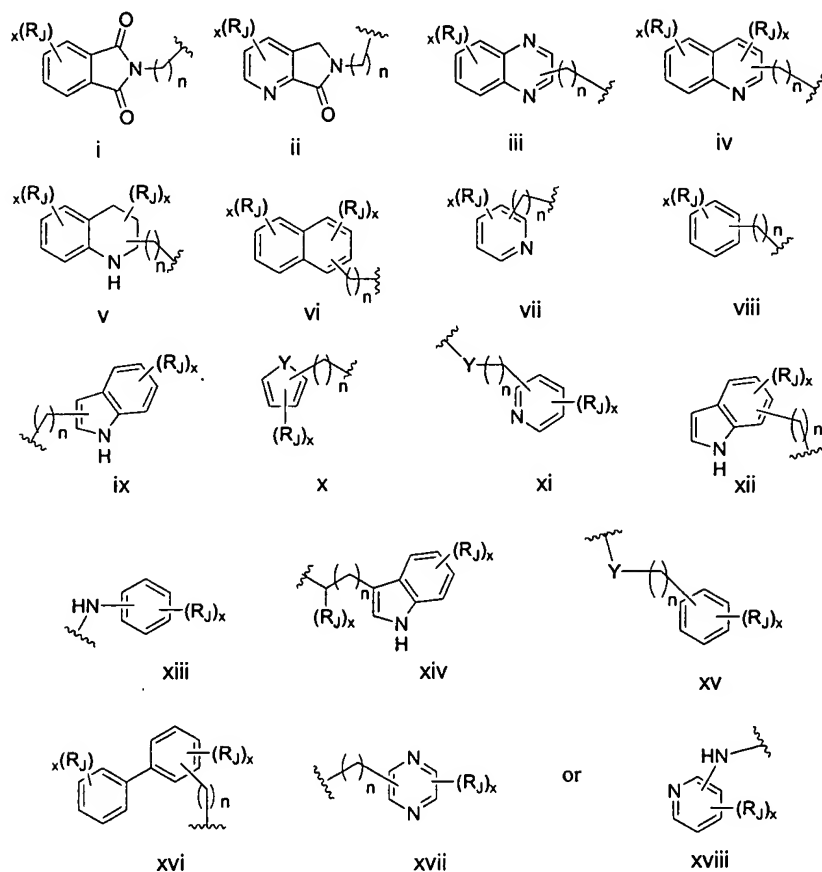
131. (New) A compound that has the structure:



wherein:

$R_1$  is  $-O(C=O)R_C$  or  $-S(C=O)R_C$ ;

$R_C$  is:



wherein each occurrence of  $R_J$  is independently  $-OR_K$ ,  $-C(=O)R_K$ ,  $-CO_2R_K$ ,  $-CN$ ,  $-SCN$ , halogen,  $-SR_K$ ,  $-SOR_K$ ,  $-SO_2R_K$ ,  $-NO_2$ ,  $-N(R_K)_2$ ,  $-NHC(O)R_K$ ,  $-B(OR_K)_2$ , or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of  $R_K$  is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or wherein two occurrences

of  $R_K$ , taken together form a cyclic aliphatic or heteroaliphatic moiety; wherein each occurrence of Y is independently O, S or NH; wherein each occurrence of x is independently 1-5; and wherein each occurrence of n is independently 0-3 wherein:

the foregoing aliphatic or heteroaliphatic is unsubstituted and

each of the foregoing aryl or heteroaryl moieties may independently be unsubstituted or substituted with one, two or three substituents independently selected from aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, alkylheteroaryl, alkoxy, aryloxy, heteroaryloxy, alkylthio, arylthio, heteroarylthio, F, Cl, Br, I, -OH, -NO<sub>2</sub>, -CN, -SCN, -CF<sub>3</sub>, -CHCF<sub>3</sub>, -CHCl<sub>2</sub>, -CH<sub>2</sub>OH, -CH<sub>2</sub>CH<sub>2</sub>OH, -CH<sub>2</sub>NH<sub>2</sub>, -CH<sub>2</sub>SO<sub>2</sub>CH<sub>3</sub>, -C(O)R<sub>x</sub>, -CO<sub>2</sub>(R<sub>x</sub>), -CON(R<sub>x</sub>)<sub>2</sub>, -OC(O)R<sub>x</sub>, -OCO<sub>2</sub>R<sub>x</sub>, -OCON(R<sub>x</sub>)<sub>2</sub>, -N(R<sub>x</sub>)<sub>2</sub>, -S(O)<sub>2</sub>R<sub>x</sub>, -NR<sub>x</sub> (CO)R<sub>x</sub>, or -B(OR<sub>x</sub>)<sub>2</sub> wherein each occurrence of wherein each occurrence of R<sub>x</sub> independently is aliphatic, heteroaliphatic, aryl, heteroaryl, alkylaryl, or alkylheteroaryl where each of the foregoing aliphatic, heteroaliphatic, , heteroaryl, alkylaryl, alkylheteroaryl, aryloxy, heteroaryloxy, arylthio, and heteroarylthio is unsubstituted; and

wherein:

each of the foregoing aliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms;

each of the foregoing heteroaliphatic moiety is cyclic, acyclic, branched or unbranched alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms and which further contains one or more oxygen, sulfur, nitrogen, phosphorus or silicon atoms in place of the carbon atoms;

each of the foregoing aryl is monocyclic or bicyclic carbocyclic ring system having one or two aromatic ring;

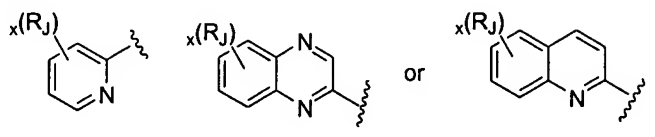
each of the foregoing heteroaryl is a cyclic aromatic radical having from five to ten ring atoms of which one ring atom is selected from S, O, and N; zero or two ring atoms are additional heteroatoms independently selected from S, O, and N; and the remaining ring atoms are carbon; and pharmaceutically acceptable salts.

132. (New) The compound of claim 131, wherein R<sub>1</sub> is -O(C=O)R<sub>C</sub>.

133. (New) The compound of claim 131, wherein R<sub>1</sub> is -S(C=O)R<sub>C</sub>.

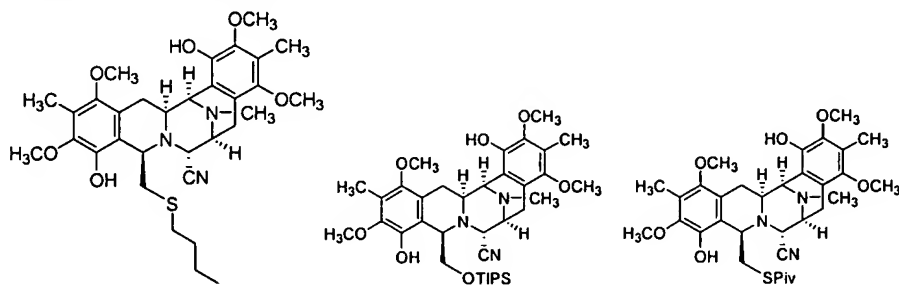
134. (New) The compound of claim 131, wherein  $X_1$  is OH,  $X_2$  is  $OCH_3$ ,  $X_3$  is  $OCH_3$ ,  $X_4$  is OH,  $R_2$  is CN, H or OH,  $R_3$  is Me,  $R_4$  is  $CH_3$ ,  $R_5$  is  $OCH_3$ ,  $R_6$  is  $CH_3$ ,  $R_7$  is  $OCH_3$ , and  $R_8$  is H.

135. (New) The compound of claim 134, wherein  $R_C$  is:



wherein  $R_J$  is hydrogen, halogen, -OH, lower alkyl or lower alkoxy and  $x$  is 1 or 2.

136. (New) A compound selected from the group consisting of:



137. (New) A pharmaceutical composition comprising a compound of any one of the claims 83-87, 90, 93, 102, 107, 110, 118, 122, 126, and 131.

138. (New) A method for inhibiting the growth of or killing cancer cells comprising contacting the cells with an amount of a composition effective to inhibit the growth of or to kill cancer cells, the composition comprising a compound of any one of the claims 83-87, 90, 93, 102, 107, 110, 118, 122, 126, and 131.

139. (New) The method of claim 138, wherein the cancer cells comprise melanoma cancer cells or lung cancer cells.

140. (New) A method for treating cancer comprising:  
administering to a subject in need thereof a therapeutically effective amount of a

composition comprising a compound of any one of the claims 83-87, 90, 93, 102, 107, 110, 118, 122, 126, and 131.

141. (New) The method of claim 140 wherein said composition comprises one or more cytotoxic agents.

142. (New) The method of claim 140, wherein the cancer cells comprise melanoma cancer cells or lung cancer cells.